Mr. William N. Barker
Inducted 2018

Mr. William N. Barker was born in Greenville, South Carolina, on 28 September 1941. He graduated from Handley High School in Winchester, Virginia, then attended Randolph Macon Military Academy before transferring to Virginia Polytechnic Institute and State University. Barker received a Bachelor of Science in Engineering Mechanics degree from that institution in 1964 and secured the title "Distinguished Military Graduate" for exemplary efforts as commander of the 1st Air Force Group in the Corps of Cadets. From university, he went to pilot training at Craig AFB in Selma, Alabama.

After leaving Craig AFB, Lieutenant Barker reported for duty as a transportation officer at Otis AFB in Falmouth, Massachusetts. The following year, a reassignment brought him to the Cheyenne Mountain Complex (CMC) in Colorado Springs, Colorado, where he served as a satellite orbital analyst and operational crew leader before leaving active duty in 1969. That single CMC tour of duty marked the first step in an astrodynamics career spanning more than 50 years, during which Mr. Barker became pivotal to improvement of the U.S. Space Catalog, a continually updated database on active satellites, rocket bodies, and thousands of trackable debris fragments orbiting Earth.

Back in civilian attire, Barker immediately became a systems analyst/scientific programmer with Philco-Ford, Western Development Laboratories, where he developed astrodynamics software for the CMC's Space Defense Center to more efficiently maintain the Space Catalog. The new method of orbit parameter update was called Sequential Processing, which allowed for the run-times for updating and maintaining the catalog to be greatly reduced. From 1970 to 1985, as a civilian mathematician in Aerospace Defense Command (later Air Force Space Command), Barker led a "special perturbations for applied astrodynamics" project and developed stand-alone software for predicting satellite reentries, which he delivered to Eglin AFB, Florida (the backup

site for CMC operations). As an adviser on reentry of NASA's Skylab in 1979, he assisted Cheyenne Mountain personnel with the re-entry using the backup stand-alone software. Later in his career, Barker also served on an AFSPC Blue Ribbon Panel investigating ways to improve satellite re-entry predictions.

Barker became the senior systems analyst and technical lead for applied astrodynamics at Teledyne Brown Engineering of Colorado Springs in 1985. While there, he developed SATRAK, a PC-based satellite tracking program. Two years later, he joined Kaman Sciences Corporation as its senior astrodynamics engineer. Over the ensuing decade, he developed and deployed a new capability for calibrating Air Force Space Surveillance Network radar and optical sensors. He also led various studies supporting the Space Defense Operations Center (SPADOC) at Cheyenne Mountain, and he was instrumental in the design of a launch collision avoidance system that supported NASA's Cassini interplanetary mission to Saturn.

Near the turn of the century, Barker moved to ITT Industries of Colorado Springs as its senior astrodynamics engineer. While continuing to support both the SPADOC and maintenance of the Space Catalog, he spearheaded development of new algorithms and applications to improve atmospheric density modeling, which enabled significantly better prediction accuracy for objects in low orbits. In 2000, Omitron, Inc., hired Barker as its senior astrodynamics support scientist to oversee development and deployment of the Astrodynamics Support Workstation (ASW) and High-Accuracy Catalog for the Joint Space Operations Center (JSpOC); with its one million lines of software code, the ASW was "the first system to routinely maintain the entire Space Catalog using special perturbations numerical techniques." A Space Surveillance Network Optimization Study and development of the High Accuracy Satellite Drag Model (HASDM) also reflected Barker's leadership role. He also headed a contractor team to review whether a collision with space debris might have caused the shuttle *Columbia* disaster in February 2003.

Barker's cumulative contributions proved critical to highly accurate prediction of orbital conjunctions and satellite re-entry. Even after his retirement in 2017, Mr. Barker actively consulted on defense-related astrodynamics issues and remained steadfastly committed to on-orbit protection of vital U.S. spacecraft.